

## REMOTE ACCESS OF FAX NUMBERS FOR FAX TRANSMISSION

### BACKGROUND

In facsimile (fax) transmissions, data is encoded for transmission over  
5 telephone lines or radio broadcast for print out at a remote location.

When performing a fax transmission, after making a connection with a  
receiving fax machine, a transmitting fax machine scans an image including, for  
example, text and/or graphics, by reading a very small area of the image at a  
time. The fax machine decides whether the area read is light or dark and digitizes  
10 the area by assigning the area a number such as "0" for white and "1" for dark.  
Then the fax transmits the number to a remote facsimile receiver. The receiver,  
for example, prints out the received image on a print media. This process  
continues as the transmitting machine scans a series of small areas horizontally  
across the image, and transmits that information to the remote receiver. The  
15 transmitting fax then scans a next lower line and so on until the entire image has  
been scanned, digitized, and transmitted.

As fax machines have increased in popularity, features have been added to  
fax machines to make them more versatile and convenient. For example, some  
fax machines have the ability to scan and transmit color images. Some fax  
20 machines include auto-dialing and fax number storage. There is a continuing  
quest to improve fax machines by increasing their versatility and convenience of  
use.

## SUMMARY OF THE INVENTION

In accordance with the preferred embodiment of the present invention, a fax is sent. A user selects a phone number for a fax destination from a database residing on a handheld device. The phone number is sent from the handheld  
5 device to a fax machine via wireless communication. A fax transmission is sent by the fax machine to the fax destination.

## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is simplified block diagram of a fax machine in wireless  
10 communication with a handheld unit in accordance with a preferred embodiment of the present invention.

Figure 2 is an illustration of the fax machine and the handheld unit shown in Figure 1 in accordance with a preferred embodiment of the present invention.

Figure 3 is a flowchart illustrating handheld access of a fax number  
15 initiated by a user using a handheld unit in accordance with a preferred embodiment of the present invention.

Figure 4 is a flowchart illustrating handheld access of a fax number initiated by a user using a fax machine in accordance with another preferred embodiment of the present invention.

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## DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 is a simplified illustration of a fax machine 10 in wireless communication with a handheld unit 20. Fax machine 10 is shown to include a

print module 13, a display 17, a scan module 12, a telephone module 11, a central controller 14, a memory 15 and a wireless communication module 16. For example, memory 15 is used to store a phone number database 18. For example, controller 14 includes a computer processor that executes programming code stored in memory 15. Wireless communication module 16 facilitates wireless communication using, for example, radio frequency signals or infrared signals using one or more standard or proprietary protocols such as IEEE 802.11b wireless, BlueTooth wireless technology and/or another of the many available or to be developed wireless protocols. The block diagram of fax machine 10 is meant to be illustrative only. That is, a person of ordinary skill in the art would recognize that fax machine 10 can be implemented with more or fewer modules arranged in a variety of configurations. The number and types of features in fax machines differs widely and have a strong effect on the way any particular fax machine is implemented.

Fax machine 10 is shown to be in wireless communication with a handheld unit 20, as illustrated by arrows 29. A handheld unit is a unit that is designed to be used while being held in one hand. Handheld unit 20 is, for example, a cell phone or a personal digital assistant (PDA). For example, a desktop computer and a laptop computer are not designed to be used while being held in one hand and so are not handheld devices as the term is used herein.

Handheld unit 20 is shown to include a display 22, a keypad 25, a memory 24, a controller 23 and a wireless communication module 21. For example, memory 24 is used to store a phone number database 26. For example, keypad 25

includes keys located separate from display 22 on handheld unit 20.

Alternatively, keypad 25 is integrated with display 22 in a touchpad configuration. For example, wireless communication module 21 facilitates wireless communication using, for example, radio frequency signals or infrared

5 signals using one or more standard or proprietary protocols. For example, controller 23 includes a computer processor that executes program code stored in memory 24. The block diagram of handheld unit 20 is meant to be illustrative only. That is, a person of ordinary skill in the art would recognize that handheld unit 20 can be implemented with more or fewer modules arranged in a variety of configurations depending upon the function and features of handheld unit 20.

Figure 2 is a simplified illustration of fax machine 10 and handheld unit 20 in wireless communication, as illustrated by arrows 29. An embodiment of display 17, display 22 and keyboard 25 are shown. Also shown are a fax input tray 61 and a document 62 loaded into a fax input 60 via fax input tray 61.

15 Figure 3 is a flowchart illustrating initiation of a fax by a user using handheld unit 20. In a block 31, a user uses keypad 25 and/or display 22 to select a discover function. In response to selection of the discover function, handheld unit 20 uses wireless communication module 21 to locate and establish contact with any nearby fax machine. When handheld unit 20 discovers and establishes communication with fax machine 10, handheld unit 20 signals the user (e.g.,  
20 through display 22, an audible sound, and/or a flashing light, etc.) that a fax machine has been detected.

In a block 32, the user loads the document to be faxed into fax input 60. In a block 33, the user selects from phone number database 26 one or more fax numbers for the fax destination. In a block 34, the user uses keypad 25 and/or display 22 to select a send fax option. In a block 35, handheld unit 20 uses wireless communication module 21 to send to fax machine 10 an initiate fax command. The initiate command is accompanied by the one or more fax numbers the user selected from phone number database 26. If specified by the user, the initiate command can also include a name, address and/or other personal information associated with the fax number for inclusion in a fax cover sheet automatically generated by fax machine 20. Fax machine 20 then initiates sending a fax to the one or more fax numbers the user selected from phone number database 26 along with any other personal information received.

In a block 36, handheld unit 20 uses display 22 to query the user about updating phone number database 18 in memory 15 of fax machine 10 with the one or more fax numbers. In a block 37, handheld unit 20 processes the response from the user. If the user requests an update of phone number database 18 in memory 15 of fax machine 10, in block 38, handheld unit 20 uses wireless communication module 21 to send to fax machine 10 an update fax phone book command. The update fax phone book command is accompanied by the one or more fax numbers the user selected from phone number database 26. The update fax phone book command also is accompanied by a name, address and/or other personal information associated with the fax number for inclusion in phone

number database 18 in memory 15 of fax machine 10. In a block, 39 the fax is complete.

Figure 4 is a flowchart illustrating handheld access of a fax number initiated by a user using fax machine 10. In a block 41, the user loads the  
5 document to be faxed into the fax input.

In a block 42, fax machine 10 uses wireless communication module 16 to locate and establish contact with any nearby handheld device. When fax machine 10 discovers handheld device 20, fax machine 10 establishes communication with handheld unit 20.

10 In a block 43, fax machine 10 uses wireless communication module 16 to send to handheld unit 20 a prompt command instructing handheld unit 20 to prompt the user for one or more phone numbers for the destination of a fax.

In a block 44, handheld unit 20 opens phone number database 26 and uses  
15 display 22 to display at least a portion of open phone number database 26 to the user.

In a block 45, the user selects from phone number database 26 one or more fax numbers for the fax destination. The user uses keypad 25 and/or display 22 to indicate the one or more fax numbers for the fax destination(s) that are to be provided to fax machine 10. Handheld unit 20 uses wireless  
20 communication module 21 to send to fax machine 10 the one or more fax numbers the user selected from phone number database 26. If specified by the user, the initiate command can also include a name, address and/or other personal information associated with the fax number for inclusion in a fax cover

sheet automatically generated by fax machine 20. Fax machine 20 then initiates sending a fax to the one or more fax numbers the user selected from phone number database 26 along any other personal information received.

In a block 46, handheld unit 20 uses display 22 to query the user about  
5 updating phone number database 18 in memory 15 of fax machine 10 with the one or more fax numbers. In a block 47, handheld unit 20 processes the response from the user. If the user requests an update of phone number database 18 in memory 15 of fax machine 10, in block 48, handheld unit 20 uses wireless communication module 21 to send to fax machine 10 an update fax phone book  
10 command. The update fax phone book command is accompanied by the one or more fax numbers the user selected from phone number database 26. The update fax phone book command also is accompanied by a name, address and/or other personal information associated with the fax number for inclusion in phone number database 18 in memory 15 of fax machine 10. In a block 49, the fax is  
15 complete.

The foregoing discussion discloses and describes merely exemplary methods and embodiments of the present invention. As will be understood by those familiar with the art, the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof.  
20 Accordingly, the disclosure is intended to be illustrative, but not limiting, of the scope of the invention, which is set forth in the following claims.